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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO. |
|--|-------------|----------------------|-----------------------------|------------------|
| 10/740,076   | 12/18/2003  | Hiroshi Takeda       | 20020802-004B               | 1388             |
| 34160  | 7590        | 04/21/2006           |                             |                  |
| SUD-CHEMIE INC.<br>1600 WEST HILL STREET<br>LOUISVILLE, KY 40210 |             |                      | EXAMINER<br>SAMPLE, DAVID R |                  |
|  |             |                      | ART UNIT<br>1755            | PAPER NUMBER     |
| DATE MAILED: 04/21/2006  |             |                      |                             |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                      |  |
|------------------------------|--------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/740,076 | <b>Applicant(s)</b><br>TAKEDA ET AL. |  |
|                              | <b>Examiner</b><br>David Sample      | <b>Art Unit</b><br>1755              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>20050929</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Any rejections and/or objections, made in the previous Office Action, and not repeated below, are hereby withdrawn.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Claim Rejections - 35 USC § 102***

Claims 1-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Matheson et al. (US 4,740,487).

Matheson et al. discloses a catalyst composition comprising ruthenium, a zeolite support, a Group VI or Group VIII metal, and a refractory support material (column 2, lines 35-60).

Typically, the Group VI or VIII metal comprises one or more of cobalt, molybdenum, tungsten and/or nickel (column 2, lines 64-66). It is the position of the examiner that these metals would meet the limitation “metal capable of forming a metal-carbonyl species” as the same metals are required by the instant claims.

The ruthenium may be loaded on the zeolite by impregnation (column 5, lines 8-12). The refractory support oxide is an inorganic oxide such as alumina, titania, zirconia, silica, and silica-alumina (column 3, lines 10-12). It is taught that the metal combinations are supported on a mixture of gamma-alumina and Y zeolite (column 3, lines 14-16). The gamma-alumina is considered to correspond to the binder material claimed. The amounts of materials taught by the reference meet the instantly claimed amounts.

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The reference does not specifically disclose the pore size and pore volume of the zeolite. However, given that the reference discloses the same zeolite (i.e. zeolite Y) as required by the instant claims and further given that zeolites are characterized and classified based upon their porous structure, it is the position of the examiner that the zeolite of the reference would inherently meet the claimed pore size and pore volume. When the examiner has reason to believe that the functional language asserted to be critical for establishing novelty in the claimed subject matter may in fact be an inherent characteristic of the prior art, the burden of proof is shifted to Applicants to prove that the subject matter shown in the prior art does not possess the characteristics relied upon. *In re Fitzgerald*, 205 USPQ 594.

As each and every element of the claimed invention is taught in the prior art as recited above, the claims are anticipated by Matheson et al.

Claims 1-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al. (US 6,017,840).

Wu et al. discloses a catalyst composition comprising a crystalline aluminosilicate and a metal selected from the group consisting of nickel, palladium, molybdenum, gallium, platinum, chromium, rhodium, rhenium, tungsten, cobalt, germanium, zirconium, titanium, ruthenium, and combinations thereof (column 2, lines 50-55). It is the position of the examiner that these metals would meet the limitation "metal capable of forming a metal-carbonyl species" as the same metals are required by the instant claims. The metal can be loaded by impregnation (column 7, line 65 - column 8, line 5). Suitable zeolites include beta zeolite (column 3, lines 45-52). The

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zeolite may be combined with a binder material including gamma-alumina and silica (column 3, lines 52-68). The amounts of materials taught by the reference would meet the instantly claimed amounts.

The reference does not specifically disclose the pore size and pore volume of the zeolite. However, given that the reference discloses the same zeolite (i.e. zeolite beta) as required by the instant claims and further given that zeolites are characterized and classified based upon their porous structure, it is the position of the examiner that the zeolite of the reference would inherently meet the claimed pore size and pore volume. When the examiner has reason to believe that the functional language asserted to be critical for establishing novelty in claimed subject matter may in fact be an inherent characteristic of the prior art, the burden of proof is shifted to Applicants to prove that the subject matter shown in the prior art does not possess the characteristics relied upon. *In re Fitzgerald*, 205 USPQ 594.

As each and every element of the claimed invention is taught in the prior art as recited above, the claims are anticipated by Wu et al.

Claims 1-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Liotta, Jr. et al. (US 5,166,370).

Liotta, Jr. et al. discloses a catalyst composition comprising one or more transition metal compounds supported on a zeolite material (column 2, lines 15- 20). Suitable transition metals include platinum, palladium, silver, copper, vanadium, tungsten, cobalt, nickel, iron, rhenium, rhodium, ruthenium, manganese, chromium, molybdenum, iridium, and zirconium, preferably palladium, nickel, ruthenium, or iron (column 2, lines 55-69). It is the position of the examiner

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that these metals would meet the limitation “metal capable of forming a metal-carbonyl species” as the same metals are required by the instant claims. Suitable zeolite materials include faujasite zeolites and mordenite (column 3, lines 40-55). The transition metal compound may be supported on the zeolite by impregnation (column 4, lines 3-15). The composition may include a binder such as clay or alumina (column 4, lines 30-36). The amounts of material taught by the reference would meet the instantly claimed amounts.

The reference does not specifically disclose the pore size and pore volume of the zeolite. However, given that the reference discloses the same zeolite (i.e. zeolite Y and mordenite) as required by the instant claims and further given that zeolites are characterized and classified based upon their porous structure, it is the position of the examiner that the zeolite of the reference would inherently meet the claimed pore size and pore volume. When the examiner has reason to believe that the functional language asserted to be critical for establishing novelty in claimed subject matter may in fact be an inherent characteristic of the prior art, the burden of proof is shifted to Applicants to prove that the subject matter shown in the prior art does not possess the characteristics relied upon. *In re Fitzgerald*, 205 USPQ 594.

As each and every element of the claimed invention is taught in the prior art as recited above, the claims are anticipated by Liotta, Jr. et al.

Claims 1-7, 10-16, 19-20, and 22-24 are rejected under 35 U.S.C. § 102(b) as being anticipated by EP 0 338 734.

EP 0 338 734 discloses a catalyst composition comprising ruthenium and nickel supported on zeolite beta by impregnation (page 2, lines 25-28). It is the position of the

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examiner that these metals would meet the limitation “metal capable of forming a metal-carbonyl species” as the same metals are required by the instant claims. The amounts of material taught by the reference would meet the instantly claimed amounts.

The reference does not specifically disclose the pore size and pore volume of the zeolite. However, given that the reference discloses the same zeolite (i.e. zeolite beta) as required by the instant claims and further given that zeolites are characterized and classified based upon their porous structure, it is the position of the examiner that the zeolite of the reference would inherently meet the claimed pore size and pore volume. When the examiner has reason to believe that the functional language asserted to be critical for establishing novelty in claimed subject matter may in fact be an inherent characteristic of the prior art, the burden of proof is shifted to Applicants to prove that the subject matter shown in the prior art does not possess the characteristics relied upon. *In re Fitzgerald*, 205 USPQ 594.

As each and every element of the claimed invention is taught in the prior art as recited above, the claims are anticipated by EP 0 338 734.

### ***Claim Rejections - 35 USC 103***

Claims 8-9, 17-18, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 338 734 as applied above to claims 1-7, 10-16, 19-20, and 22-24 and further in view of Chang et al. (US 6,037,513).

The teachings of the EP reference are as applied above for claims 1-7, 10-16, 19-20, and 22-24.

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The difference between the reference and the claims is that the reference does not disclose that the catalyst composition contains a binder material.

Chang et al. discloses a catalyst composition for the hydroalkylation of an aromatic compound and teaches that the catalyst is conventionally combined with a binder material such as alumina or silica (column 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the composition taught by the EP reference to include the use of a binder material in light of the teaching by Chang et al. One of ordinary skill would have been motivated to include the use of conventional binder materials with a reasonable expectation of success because both catalyst compositions can be used in the same process of use.

### ***Response to Arguments***

Applicant's arguments filed February 3, 2006 have been fully considered but they are not persuasive.

Applicants traverse each of the prior art rejections on the grounds that applied references are intended for a different use than the present claims. In this regard, the claims state that the catalyst is "for carbon dioxide methanation reactions for fuel cells." This phrase is a statement of intended use. In regards to intended use statements, MPEP 2111.02 states:

During examination, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. See, e.g., *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963)....

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No structural difference can be discerned between the each of the applied prior art references and the present claims.

Applicants argue that the references do not suggest that carbon monoxide should be present in the feedstream. Without the carbon monoxide, the catalyst cannot form fully carbonylated metal complex. This argument is not deemed persuasive and raises two points. First, the argument is directed to the conditions under which the catalyst is employed rather than a difference between catalyst of the present claims and the prior art. Again statements of intended use must result in a difference between the prior art and the claimed catalyst, and no such difference can be discerned.

Second, it appears that applicants are arguing that the instant catalyst must contain a fully carbonylated metal complex, and the prior art does not suggest such a metal complex. This argument is directed to a limitation that is not claimed. The present claims recite that the catalyst contains “a metal capable of forming a metal carbonyl species” (emphasis added). The claims do not require that the catalyst contain a metal carbonyl species. The metals disclosed by the references are the same as the presently claimed metals, and therefore they are “capable” of forming a carbonyl species.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

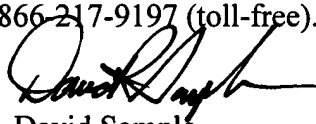
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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Sample whose telephone number is (571)272-1376. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (572)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David Sample  
Primary Examiner  
Art Unit 1755